

REMARKS

By this Response, no claims have been amended, added, or canceled. Claims 1-18 and 20 are pending.

Rejection of Claims 9-12, 15, 18 and 20 Under 35 U.S.C. § 102(e)

In the Final Office Action, the Examiner rejected claims 9-12, 15, 18 and 20 under 35 U.S.C. § 102(e) as being unpatentable over *Kent* (U.S. Patent No. 6,130,016). This rejection is respectfully traversed.

The subject matter of independent claim 9 is directed to a method for monitoring critical dimension (CD) variations of a reticle. The method includes providing a reticle layer over a substrate, the reticle layer including a patterned feature area and a test pattern area wherein a portion of the test pattern area is within a step-distance of a portion of the patterned feature area, patterning a material by stepping the reticle, and visually inspecting the patterned material for light and dark regions within the test pattern area, the light and dark regions representing a corresponding variance in the patterned feature area.

The subject matter of independent claim 18 is directed to a method for making a semiconductor device. The method includes patterning a resist material by stepping a reticle, wherein the reticle includes a patterned feature area and a test pattern area, wherein a portion of the test pattern area is within a step-distance of a portion of the patterned feature area. The method further includes visually inspecting the patterned resist material for light and dark regions within a corresponding test pattern area, the light and dark regions representing a systematic variance in critical dimension (CD) in

the patterned resist material, and using the patterned resist material to form a feature of a semiconductor device after visually inspecting.

It is the Examiner's position that *Kent* discloses the limitations of: providing a reticle over a reticle substrate, said reticle layer including: a pattern area (220, fig. 3a) area; and a test pattern area (230, fig. 7), wherein a portion of said test pattern area is within a step-distance of a portion of said patterned area (col. 6, lns. 14-40); patterning a material by stepping said reticle; and visually inspecting said material for light and dark regions within said test pattern area, said light and dark regions representing said variance in said patterned area.

In the Response to Arguments portion of the Final Office Action, the Examiner states that "the calibration reticle patterns both the feature and test pattern areas, when calibrating the device for operation. There is nothing in the *Kent* disclosure that limits the calibration reticle from patterning both the feature and test areas".

As the Examiner is aware, to anticipate a claim, the reference must teach every element of the claim. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). See also *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989) which states "The identical invention must be shown in as complete detail as is contained in the ... claim". Such is not the case with *Kent*.

To the contrary, it is respectfully submitted that the calibration reticle and the semiconductor structure reticle of *Kent* are separately described and each with separate

functions. If the calibration reticle of *Kent* was intended to pattern the features, it is respectfully submitted that there would be no need to disclose the semiconductor structure reticle therein. More specifically, the reticle 200 of *Kent* is a "calibration reticle" containing only test patterns 220 each having a series of structures 230. In *Kent*, the test patterns 220 are used to adjust a stepper, after which a "semiconductor structure reticle" can be placed on the stepper to form semiconductor structures. The line structures are only intended to "mimic a pitch value of a semiconductor structure reticle". See column 6, lines 14-40 of *Kent*.

In distinction, the present invention includes both the patterned feature area and the test pattern area within the same reticle layer. The advantage to having both the semiconductor pattern (patterned feature area) and test pattern on the same reticle is to ensure that the *formed* semiconductor pattern is accurate between step distances on the reticle.

Accordingly, the separate limitations of a "patterned feature area" and a "test pattern area" are not supported by *Kent*.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 9-12, 15, 18 and 20 under 35 U.S.C. § 102(e). Applicants submit that claims 10-12, 15; and claim 20 are in condition for allowance, at least by virtue of their dependency from allowable claims 9 and 18, respectively.

Rejection of Claims 13 and 16-17 Under 35 U.S.C. § 103(a)

In the Office Action, the Examiner rejected claims 13 and 16-17 under 35 U.S.C. § 103(a) as being unpatentable over *Kent* (U.S. Patent No. 6,130,016), as applied to

claims 9-12 above, in view of *Ausschnitt et al.* (U.S. Patent No. 5,914,784). This rejection is respectfully traversed.

Claim 13 is directed to the reoccurring line/space structure having a pitch of less than about $3/2$ the wavelength in use. Claims 16 and 17 are directed to visually inspecting the material using an optical microscope and further changing a focus on the optical microscope to cause light and dark regions to become more or less pronounced.

It is the Examiner's position that *Kent* reads on the claims as applied above, but does not disclose the claimed limitation(s) of: wherein said reoccurring line/space structure has a pitch of less than about $3/2$ the wavelength in use; wherein visually inspecting said material includes using an optical microscope; and further including changing a focus on the optical microscope to cause light and dark regions to become more or less pronounced. *Ausschnitt et al.* are applied as disclosing visually inspecting and changing a focus, and the Examiner asserts that the wavelength recitation would be obvious to one of ordinary skill in the art.

To the contrary, *Ausschnitt et al.* simply disclose using a microscope to determine the edge of an object and do not overcome the deficiencies noted above in connection with *Kent*.

With regard to the Examiner's comments regarding case law on ranges, it is respectfully acknowledged that it is not inventive to discover the optimum or workable ranges by routine experimentation. However, if the variable is "result effective" then it is acceptable to seek optimization of that variable. See MPEP § 2144.05 IIB. In the original specification, beginning at paragraph [0031] thereof, is an explanation of why the pitch of the test pattern 200 is of importance. The magnitude of the variance in the

CD of the patterned material as designed depends on the pitch. It is believed that the pitch of the test pattern 200 is related to the optical wavelength of the exposure tool used to pattern the wafer. A relationship of the pitch of the test pattern to the optical wavelength of the exposure tool is a result effective variable neither taught nor suggested by the applied references.

Thus, the combination, even if made, fails to teach or suggest the claimed invention.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 13 and 16-17 under 35 U.S.C. § 103(a). Applicants submit that claims 13 and 16-17 are further in condition for allowance at least by virtue of their dependency from allowable claim 9.

Rejection of Claim 14 Under 35 U.S.C. § 103(a)

In the Office Action, the Examiner rejected claim 14 under 35 U.S.C. § 103(a) as being unpatentable over *Kent* (U.S. Patent No. 6,130,016), as applied to claim 9 above, in view of *Asano et al.* (U.S. Patent No. 6,741,334). This rejection is respectfully traversed.

Claim 14 depends from claim 9 and recites "wherein the test pattern area is located in a scribe region defined by said patterned area".

It is the Examiner's position that *Kent* fails to disclose the limitation of claim 14, and has therefore applied *Asano et al.* for this teaching, relying on column 5, lines 45-60 thereof.

To the contrary, since *Asano et al.* do not address providing a reticle layer including a patterned feature area and a test pattern area, the missing teachings described in connection with *Kent* have not been overcome. Thus, the combination of *Kent* and *Asano et al.* fail to teach or suggest the subject matter of claim 14.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claim 14 under 35 U.S.C. § 103(a). Applicants submit that claim 14 is further in condition for allowance at least by virtue of its dependency from allowable claim 9.

CONCLUSION

In view of the foregoing remarks, Applicants submit that this claimed invention, as amended, is neither anticipated nor rendered obvious in view of the prior art references cited against this application. Applicants therefore request the entry of this Amendment, the Examiner's reconsideration and reexamination of the application, and the timely allowance of the pending claims.

If the Examiner believes that additional discussions or information might advance the prosecution of the instant application, the Examiner is invited to contact the undersigned at the telephone number listed below to expedite resolution of any outstanding issues.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 20-0668.

Respectfully submitted,

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